

## Abstract

Systems and methods of MIMO wireless communication system with partial feedback are disclosed. In one embodiment, a base station estimates the channel matrices of the  $K$  mobile units and transmits an index value corresponding to each of the estimated channel matrix. Each mobile unit selects a power control matrix and beam-forming matrix based on the received index value and transmits its data stream to the base station using the selected power control and beam-forming matrix. A method for generating the sets of power control matrices, beam-forming matrices, and partitions of the channel matrix space is disclosed.